

TIME OF DAY EFFECTS ON MENTAL STRESS-RELATED SYMPATHETIC NERVOUS SYSTEM ACTIVATION IN SHIFT WORKERS

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Fatigue and stress are the most common complaints of shift workers. They are also the largest contributors to the increase in errors that occurs during shifts outside of normal daytime hours. Stress in shift work has largely been attributed to increased fatigue from working outside of the body's optimal circadian rhythms for performance. This study sought to establish a link between higher stress levels and an actual difference in time of day sympathetic nervous system activation. To examine this link, differences were investigated in the body's physiological stress responses to performing mental tasks during day and evening shifts in military shift workers. United States Air Force air traffic control personnel that switch rapidly between a day shift and a swing shift participated in the study. Each participant was tested during each of their shifts by performing a variation of Stroop's Naming Colored Words Task and a visual matching task from Woodcock Johnson's Cognitive Battery. These tasks were expected to be stress-inducing as they required quick and accurate scanning and filtering of information. Continuous data for heart rate and galvanic skin response were gathered during each testing period. These data were analyzed as indicators of sympathetic nervous system arousal. Heart rate data showed higher maximum values at night than during the day. Galvanic skin response data displayed the same trend of higher maximum values at night. While there were physiological differences between shifts, cognitive performance showed no significant difference between day and swing shifts. The higher maximum values of stress indicators at night show that completion of the tasks during the swing shift resulted in higher stress levels. The major implication of this finding is that while task performance did not differ, stress from task performance was enhanced at night. These differences in sympathetic stress levels may help account for greater fatigue during night and swing shifts.

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THE BENEFITS OF INTEGRATING FACULTY LIBRARIANS WITH CAMPUS FUNDED UNDERGRADUATE AND GRADUATE RESEARCH PROGRAMS

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